REMARKS

The Office Action dated October 16, 2008 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1, 6, and 21 have been amended to more particularly point out and distinctly claim the subject matter of the invention. Claims 22-24 have been cancelled without prejudice or disclaimer. New claims 26-28 have been added. No new matter has been added and no new issues are raised which require further consideration or search. Therefore, claims 1, 3-21, and 25-28 are currently pending in the application and are respectfully submitted for consideration.

The Office Action rejected claims 1, 3-20, and 22-25 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Larsson et al. (U.S. Patent No. 6,282,427) ("Larsson"), in view of Heinonen et al. (U.S. Publication No. 2003/0069027) ("Heinonen"). The Office Action took the position that Larsson discloses all the elements of the claims with the exception of "past measurement," and "wherein the providing selection information comprises self-learning based upon historical quality information associated with the measurement devices," with respect to claims 1, 7, 12, 16, 22, and 24-25; and "the selection information including information of measurement devices that have historically provided measurement information," with respect to claims 6 and 23. The Office Action then cited Heinonen as allegedly curing the deficiencies of Larsson. The rejection is respectfully traversed for at least the following reasons.

Claim 1, upon which claims 3-5 are dependent, recites a method, which includes receiving quality information regarding quality of results of past measurements associated with location determination by at least two measurement devices, and storing said quality information and identity information associated with the at least two measurement devices. The method further includes providing selection information for selection of measurement devices for future location determinations, based upon the stored quality and identity information. The providing selection information includes self-learning based upon historical quality information associated with the measurement devices.

Claim 6 recites a method, which includes obtaining selection information for selection of at least one measurement device when a location process is triggered, the selection information including information of measurement devices that have historically provided measurement information that satisfies a predefined criteria. The method further includes selecting at least one measurement device, and locating user equipment based on measurement information from the selected at least one measurement device.

Claim 7, upon which claims 8-11 are dependent, recites a method, which includes storing historical data of various measurements in a mobile system, and selecting at least one measurement device based upon the historical data. The method further includes self-learning based upon historical data associated with measurement devices.

Claim 12, upon which claims 13-15 are dependent, recites a system, which includes at least two measurement devices configured to provide measurement data for location determination, and a quality controller configured to provide quality information regarding quality of results of past measurements by the at least two measurement devices. The system further includes a storage configured to store quality information of measurements by the at least two measurement devices, and a selection controller configured to provide selection information for selection of measurement devices for future location determinations based upon quality information that is stored in the storage. The system is configured to self-learn based upon the quality information regarding the quality of results of past measurements by the at least two measurement devices.

Claim 16, upon which claims 17-20 are dependent, recites an apparatus, which includes a processor configured to process quality information associated with quality of results of past location measurements by a plurality of measurement devices and to provide selection information for selection of at least one measurement device for future location determinations based upon the quality information. The processor is further configured to self-learn based upon the quality information associated with the quality of results of past location measurements.

Claim 25 recites an apparatus, which includes processing means for processing quality information associated with quality of results of past location measurements by a plurality of measurement devices. The apparatus further includes means for providing

selection information for selection of at least one measurement device for future location determinations based upon the quality information, and means for self-learning based upon the quality information associated with the quality of results of past location measurements.

Claim 26 recites an apparatus, which includes a receiver configured to receive quality information regarding quality of results of past measurements associated with location determination by at least two measurement devices, and a storage configured to store said quality information and identity information associated with the at least two measurement devices. The apparatus further includes a processor configured to provide selection information for selection of measurement devices for future location determinations based upon the stored quality and identity information. The processor is further configured to self-learn based upon historical quality information associated with the measurement devices.

Claim 27 recites an apparatus, which includes a receiver configured to receive selection information for selection of at least one measurement device, the selection information including information of measurement devices that have historically provided measurement information that satisfies a predefined criteria, and a processor configured to select at least one measurement device. The processor is configured to locate user equipment based on measurement information from the selected at least one measurement device.

Claim 28 recites an apparatus, which includes a storage configured to store historical data of various measurements in a mobile system, and a processor configured to select at least one measurement device based upon the historical data. The processor is further configured to self-learn based upon historical data associated with measurement devices.

As will be discussed below, the combination of Larsson and Heinonen fails to disclose or suggest all of the elements of the claims, and therefore fails to provide the features discussed above.

Larsson generally discloses an apparatus and method of selecting location measurement units for measuring an uplink signal transmitted by a mobile communication station operating in a wireless communication network in order to locate the position of the mobile communication station in the wireless communication network. The location measurement units to be used in measuring the uplink signal can be identified by evaluating one or more of relative positional relationships between the possible position of the mobile station and a plurality of further positions respectively associated with a plurality of location measurement units in the network, path loss measures predicted for each of a plurality of location measurement units relative to the possible position of the mobile station, and geometric dilution of precision (GDOP) values determined for each of a plurality of groups of location measurement units with respect to the possible position of the mobile station. (See Larsson at Abstract).

Heinonen generally discloses a location method for mobile networks. A location estimate is determined based on a parameter set received from the mobile network. In order to improve the accuracy of the system, a matrix is formed for an individual first parameter set, the matrix including a plurality of elements, whereby each element is associated with a certain geographical area and contains a value which indicates the probability of the mobile being located within said area. At least one matrix formed for a mobile is stored, and in response to a second parameter set received for the mobile, the values of at least one matrix stores are updated, and the location estimate is determined on the basis of the element values of the matrix corresponding to the second parameter set and on the basis of the element values of the at least one matrix having the updated values. (See Heinonen at Abstract).

Applicants respectfully submit that Larsson and Heinonen, whether considered individually or in combination, fail to disclose, teach, or suggest, all of the elements of the present claims. For example, the combination of Larsson and Heinonen fails to disclose, teach, or suggest, at least, "*wherein the providing selection information comprises self-learning based upon historical quality information associated with the measurement devices*," as recited in independent claim 1, and similarly recited in independent claims 7, 12, 16, 25, 26, and 28; and "*the selection information including information of measurement devices that have historically provided measurement information that satisfies a predefined criteria*," as recited in independent claim 6, and similarly recited in independent claim 27.

The Office Action correctly acknowledged that Larsson fails to disclose, teach, or suggest, the aforementioned limitations of the independent claims. (See Office Action at page 5).

Furthermore, Heinonen does not cure the deficiencies of Larsson. As will be discussed below, Heinonen fails to disclose, or suggest, "*self-learning*" as recited in independent claim 1, and similarly recited in independent claims 7, 12, 16, 25, 26, and 28; and "*historically provided measurement information that satisfies a predefined criteria*," as recited in independent claim 6, and similarly recited in independent claim 27.

With respect to "*self-learning*" as recited in independent claim 1, and similarly recited in independent claims 7, 12, 16, 25, 26, and 28, in the "Response to Arguments" section, the Office Action took the position that Heinonen discloses "*self-learning*" because Heinonen discloses "calculating an estimate for the location of a mobile using history data (i.e. previous estimates) to make the estimating more accurate." (See Office Action at page 2). The Office Action further cites paragraphs 0009-0011 of Heinonen, which further elaborate the calculating process disclosed in Heinonen. (See Office Action at page 3). Applicants respectfully submit that the mere usage of history data to calculate an estimate of location is not equivalent to "*self-learning,*" as recited in the independent claims, because, while the system of Heinonen uses historical data to create a matrix used to calculate a location estimate, the system of Heinonen fails to learn anything from the historical data that is used in the estimation process. (See Heinonen at paragraph 0032).

As discussed in the Response of June 19, 2008, Heinonen discloses that parameter sets available from a mobile network are processed in an accuracy server, which receives location requests from external objects. The accuracy server forms a matrix on the basis of the parameter set or retrieves a matrix corresponding to the parameter set from among a plurality of matrices formed in advance and stored in a matrix database. The accuracy server further uses mobile-specific history data stored in a history database. Specifically, a previous matrix obtained in connection with a preceding parameter set relating to the same mobile is also retrieved from the history database, and this matrix is supplied to an update process. As a result of the update process, a spread history matrix is obtained. (See Heinonen at paragraphs 0029 and 0034). The current matrix and the spread history matrix are then supplied to a combination process where a combined matrix of the same size is determined. At least one location estimate is then calculated on the basis of the combined matrix. Furthermore, the combined matrix is supplied to the history database, where it replaces the previous matrix. (See Heinonen at paragraph 0035). Therefore, Heinonen merely teaches using history data to make a location estimate more accurate, and does not teach self-learning.

In contrast, according to an embodiment of the present invention, a SMLC obtains the cell identity of a cell serving a mobile station when a request for location information is received, as well as obtaining a valid timing advance. The SMLC calculates a rough location estimate using the cell identity and the timing advance parameter, and then engages in an advanced location attempt, such as a U-TDOA. Thus, a <u>self-learning</u>

process is disclosed, where the <u>SMLC is learning how the LMUs perform under certain criteria</u>. Once a sufficient amount of statistical data is collected, the SMLC uses the data to estimate which LMUs are most likely to perform useful measurements, i.e. the SMLC <u>learns</u> which LMU is most likely to perform a useful measurement. Once it is concluded that a sufficient amount of data is collected, a statistical analysis of the collected data is performed, and a LMU list is generated. Thus, due to the self-learning process, the SMLC now has a list of LMUs most likely to perform useful measurements. (see Specification at 0051-0056). As described above, this self-learning process is not disclosed or suggested in Heinonen.

The Office Action further took the position that the specification of the present application states "utilization of history data to provide selection criteria to select proper location measurement units. This may provide self learning based upon historical good quality measurements." The Office Action further took the position that "[i]t is therefore clear that Heinonen discloses the applicant's argued limitation of self learning." (See Office Action at page 3). Applicants respectfully submit that the full paragraph states, "<u>[i]n one embodiment</u>, the invention comprises utilization of history data to provide selection criteria to select proper location measurement units. This <u>may</u> provide self learning based upon historical good quality measurements." (See Specification at paragraph 0045 (emphasis added). Thus, given the context, the paragraph does not indicate that the mere utilization of history data to provide selection criteria is equivalent

to self-learning. Instead, the paragraph indicates that self-learning may utilize history data, as part of the process.

With respect to "*historically provided measurement information that satisfies a predefined criteria*," as recited in independent claim 6, and similarly recited in independent claim 27, in the "Response to Arguments" section, the Office Action took the position that Applicants "contradict himself on page 17 [of the Response of June 19, 2008] of his argument when it states that the history matrix of Heinonen's is combined with a current matrix determined by the system based on a set of predetermined rules. Thus, Heinonen discloses historical measurement information that satisfies predetermined criteria." (See Office Action at page 3). However, the Office Action is incorrect, as there is no contradiction. The set of predetermined rules, as disclosed in Heinonen, governs <u>how the current matrix is combined with the history matrix</u>, and <u>does not</u> determine whether the history matrix satisfies a predetermined criteria.

Furthermore, as Applicants argued in the Response of June 18, 2008, Larsson merely discloses that a mobile location center searches in its database for LMU's which are closest to the middle of the location area. (See Larsson at col. 4, lines 19-21). The cited passage fails to disclose or suggest that the mobile location center searches for LMU's which have <u>historically</u> been closest to the middle of the location area, and thus, Larsson fails to disclose, or suggest, "*historically provided measurement information that satisfies a predefined criteria.*" Moreover, Heinonen merely discloses that the system uses mobile-specific history data stored in a history data base, which comprise matrices

obtained in connection with earlier received parameter sets. (See Heinonen at paragraph 0029). The cited portion fails to disclose, or suggest, that a selected historical matrix must satisfy any predefined criteria. Thus, Heinonen also fails to disclose, or suggest, "*historically provided measurement information that satisfies a predefined criteria.*"

Therefore, for at least the reasons discussed above, the combination of Larsson and Heinonen fails to disclose, teach, or suggest, all of the elements of independent claims 1, 6-7, 12, 16, and 25-28. For the reasons stated above, Applicants respectfully request that this rejection be withdrawn.

Claims 3-5 depend upon independent claim 1. Claims 8-11 depend upon independent claim 7. Claims 13-15 depend upon independent claim 12. Claims 17-20 depend upon independent claim 16. Thus, Applicants respectfully submit that claims 3-5, 8-11, 13-15, and 17-20 should be allowed for at least their dependence upon independent claims 1, 7, 12, and 16, and for the specific elements recited therein.

The Office Action rejected claim 21 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Nowak (U.S. Patent No. 6,968,195) ("Nowak"), in view of Heinonen. The Office Action took the position that Nowak discloses all the elements of the claims with the exception of "self-learning based upon the quality information associated with the quality of results of past measurements." The Office Action then cited Heinonen as allegedly curing the deficiencies of Nowak. The rejection is respectfully traversed for at least the following reasons.

Claim 21 recites a computer program comprising program code configured to perform a method when the program is run on a computer. The method includes receiving quality information of results of past location measurements provided by a plurality of measurement devices, and obtaining selection information for selection of at least one of said plurality of measurement devices to use for future location determinations based upon the quality information. The method further includes self-learning based upon the quality information of the results of past location measurements by the measurement devices.

As will be discussed below, the combination of Nowak and Heinonen fails to disclose or suggest all of the elements of the claims, and therefore fails to provide the features discussed above.

The description of Heinonen, as discussed above, is incorporated herein. Nowak generally discloses a method and apparatus for managing the selection of location information sources to provide location information for a mobile communications unit. Embedded within a request for location information on a particular mobile communication unit are one or more specifications regarding the quality of the requested location information. Such specifications are used to determine if any location information sources are able to provide the location information with the desired location information quality. (See Nowak at Abstract).

Applicants respectfully submit that Nowak and Heinonen, whether considered individually or in combination, fails to disclose, teach, or suggest, all of the elements of

the present claims. For example, the combination of Nowak and Heinonen fails to disclose, teach, or suggest, at least, "*self-learning based upon the quality information of the results of past location measurements by the measurement devices*," as recited in independent claim 21.

The Office Action correctly acknowledged that Novak fails to disclose, teach, or suggest, the aforementioned limitation of independent claim 21 (See Office Action at page 9). Furthermore, Heinonen does not cure the deficiencies of Nowak. While each claim of the present application has its own scope, Applicants respectfully submit that Heinonen fails to disclose, or suggest, "*self-learning based upon the quality information of the results of past location measurements by the measurement devices*," as recited in independent claim 21, for similar reasons as to why Heinonen fails to disclose, or suggest, "*wherein the providing selection information comprises self-learning based upon historical quality information associated with the measurement devices*," as recited in independent claim 1, as discussed above.

Therefore, for at least the reasons discussed above, the combination of Nowak and Heinonen fails to disclose, teach, or suggest, all of the elements of independent claim 21. For the reasons stated above, Applicants respectfully request that this rejection be withdrawn.

For at least the reasons discussed above, Applicants respectfully submit that the cited prior art references fail to disclose or suggest all of the elements of the claimed invention. These distinctions are more than sufficient to render the claimed invention

unanticipated and unobvious. It is therefore respectfully requested that all of claims 1, 3-21, and 25-28 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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